ARM Nauru Research Station Site Visit 0804N Report

Visit Duration: 04 April to 17 April 2008

Nauru Island, Republic of Nauru

| | SV-0804N | |
|--|--|--|
| | Final Report | |
| Site: Nauru Team Members: Krzysztof Krzton Mike Ryczek Hastings Deering? | Required Items & Other Actions: Order VSAT antenna bolts - MA to followup Chain and padlock of fuel cap for GENSET fuel tank - BOM to purchase and ship CIMEL #98 - ship from NASA GSFC (Newcomb) to SGP then Nauru IRT lens from SKY & GND units - ship from Darwin MMCR TWTA - ship from SGP (en route) MMCR CUDC - ship from Darwin (en route) MMCR waveguide & cables - Widener to ship MPL computer RAM upgrade - KK to handcarry from Darwin TSI temp. probe - MA to purchase. Epoxy resin to mount the probe/seal cable entry required Spare GPS Suominet - Theresa Vanhove to ship to SGP then Nauru DigiCORA III property tag - hand-carry from Darwin | |
| Task Summary: | Safety: Major Hazards: Caustic chemicals (KOH), Explosive gas (H2), AC electricity Hazard Controls: BOM Electrolyser Handbook, BM Electrolyzer Operations/Maintenance Training, ASNZS 4836/2001-Safe Working on LV Electrical Installations, 2-man rule When replacing items (e.g., desiccant, filters, etc.), record and report the quantity of spares left on | |
| | SITE TASKS | |
| High priority / usually no | Completed Completed | |

| | · ···g··· p···o····y / · | isdaily Horr routine | 2011 p | Honty / asaany rounic | Completed | |
|----------|--------------------------|---------------------------------|-------------------------|---|---|--|
| Priority | System | Date Completed (dd/Month) | Service Time (hours) | | Tasks insert new line (row) for each date/time entry | |
| 1 | TSI | | | Install repaired TSI #107 | | |
| | | | | TSI already installed by | observers with assistance from Darwin | |
| | | | | technicians - operational | as of 5th of March 2008 (CS-2008-0137) | |
| | ORG | | | Connect ORG heater ca | ble | |
| | | 9-Apr | | Heater cable connected | today. | |
| | LICOR | | | Inspect LICOR Site. Inve | estigate noise problem. | |
| | | 10-Apr | | Searching for suitable m | aterial to make new stand for radiometers | |
| | | | | to ensure they are insua | Ited from metal roof and can be levelled. | |
| | | 11-Apr | | LICOR site radiometer cables replaced. Radiometers reinstalled | | |
| | | | | on a non-conductive base to insulate them from metal roof. Data | | |
| | | | | downloaded and sent to mentor - night noise problem reduced. | | |
| | | | | Will download data again on Monday to send to Mentor. | | |
| | | 15-Apr | | Mentor advised that data | a good and noise problem dissapeared. | |
| | IRT computer | | | Investigate thermal failur | e of IRT PC. | |
| | | 12-Apr | | | down due to thermal failure and fan | |
| | | | | failure. Searching for rep | placement fan. | |
| | | 13-Apr | | Asked observers to remove their documents and personal stuff of | | |
| | | | | spare obs PC. This is a GX270 machine that can be used to | | |
| | | | | supply parts for failed IR | T PC | |
| | | 14-Apr | | Completed. IRT PC oper | Completed. IRT PC operational. Could mentor please check it and | |
| | | | | advise if all OK. | | |

| | SITE TASKS | | | | | | |
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| 1 | SKYRAD | | | (looking from behind trace PIR1, B/W, PIR2 | Z tracker to reflect the following layout: cker, toward the sun, from left to right) | | |
| | | 9-Apr | | BCR 1442. Looking from | ed around to reflect layout requested by n behind the tracker towards the sun the | | |
| 2 | TSI | 2.4 | | request. | enter it over mirror - as per mentors | | |
| | | 9-Apr | | | pack from Mentor required. | | |
| | | 10-Apr | | alignment tomorrow at S | Mounting arm appears bent. Will check Solar Noon. Awaiting feedback from emp probe and camera alignment. | | |
| | | 12-Apr | | Awaiting response from arm. | mentor regarding straightening of camera | | |
| | | 15-Apr | | Camera arm dismantled Awaiting confirmation from | , straightened, rust removed and painted. om mentor that all OK. | | |
| 3 | TSI | | | Install temperature probe | | | |
| | | 8-Apr | | Installed temperature probe today, but connection of the probe made no change. TSI still reports random temperature values occasionally. Newly supplied temp probe is physically different from the remains of the old one. Could mentor please confirm th type and specifications of the TSI dome temperature probe? | | | |
| | | 10-Apr | | Replaced TSI dome temperature probe using spare thermistor brought from Darwin. All TSI temperature channels still report random values when new probe connected. Advised mentor, awaiting instructions. | | | |
| | | 13-Apr | | Mentor veryfying the temperature probe specifications with the designer. | | | |
| | | 14-Apr | | Heater turned off at its circuit breaker. | | | |
| | | 16-Apr | | Heater turned back on a | | | |
| 4 | MMCR | | | | DC as per mentor's request | | |
| | | 5-Apr | | | UDC. Loose screw was rattling inside | | |
| | | 6-Apr | | CUDC. Removed cover to inspect for damage New CUDC installed as per mentors request. Mentor notified and will advise when he wants new TWTA installed. New waveguide t coax converters installed. | | | |
| | | 7-Apr | | Faultfinding new CUDC. | | | |
| | | 8-Apr | | Awaiting mentors feedba | | | |
| | | 9-Apr | | with waveguide runs as displaying TX power loca for next 12 hours to see | | | |
| | | 10-Apr | | Mentor requested that the new TWTA and the old CUDC currently in service be unsinstalled and old TWTA and new CUDC be installed using coax to waveguide converters. This has been carried out. At 16:00 Local time mentor advised 'I just checked and it looks like it is working. Let's let it run for the next 12 hours and I'll plot the transmit power in the morning' | | | |

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| | | 11-Apr | | advised and will review of VA)not able to power who connected to to Liebert I | | |
| | | 12-Apr | | waveguide components | and checked dummy loads.Checked old , and termprarilly replaced IF attenuator waiting instructions from mentor. | |
| | | 13-Apr | | and CUDC as per mento | ver still fluctuating. Reinstalled old TWTA ors request. has recalibrated MMCR this morning. | |
| | | 14-Apr 17-Apr | | Mentor advised that no f | further work necessary. New TWTA and o Darwin as ready spares. | |
| 5 | MMCR | C A 77 | | | ables as per mentor's request | |
| 6 | CIMEL | 6-Apr | | | converters and coax cables installed ewly calibrated unit #98 if it arrives in time. | |
| | | 5-Apr | | Concrete pad reseated I | • | |
| | | 6-Apr | | | tional. Awaiting feedback from mentor | |
| | | 8-Apr | | Modified upload batch file to include new instrument number. Mentor confirmed that data is being uploaded to AERONET site. | | |
| 7 | H2GEN | | | Replace electrolyser compressor. Perform necessary modifications to install new type Q-Air compressor. | | |
| | | 4-Apr | | Unpacked replacement compressors. Pulleys on both units have been damaged during shipping - one has completely broken off its shaft hub, the other is cracked round the shaft hub and perimeter. Instalalled fittings on compressor head. Replacement of Electrolyser compressor will need to be postponed til new pulleys can be sourced. | | |
| | | 7-Apr 16-Apr | | Andrew is searching the island for replacement pulleys. Could not locate replacement pulleys. Postponed till next site visit. | | |
| 8 | H2GEN | | | hydrogen distribution pa | Rheem H2 storage cylinders, install anel. Relocate Helium cylinder stand. | |
| | | 4-Apr | | Unpacked Rheem storage | | |
| | | 12-Apr | | Repositioned eye wash station to allow for the installation of hydrogen distribution panel. | | |
| | | 16-Apr | | Hydrogen distribution panel installed. Helium cylinder stand will need to be manufactured and installed. Cylinder tied in with rope at present. | | |
| 9 | H2GEN | 40.4 | | Perform electrolyser sch | | |
| | | 13-Apr | | Commenced electrolyse pulley for the new comp | er maintenance. Awaiting a replacement ressor. | |
| | | 14-Apr | | Electrolyser maintenanc band which hold thefilten broke at one of the spot may require replacing. T | ce continuing. Stainless steel tensioning r body together has corroded through and welds. Whole coalescing filter assembly remporary bypass constructed from parts stalled - will test tomorrow. | |

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| | | 15-Apr | | Maintenance completed. Electrolyser tested and operational. New coalescing filter assembly will need to be supplied and installed. New set of modifed SG plugs will ned to be shipped and installed. Current plugs due to their design pose a risk of a spark occuring when two ajacent cells are touched with a tool used to remove the plugs. This has the potential to ignite hydrogen if present. Action for now; do not remove SG plugs til new modified plugs are supplied. Hydrogen storage water drain seems to be plugged with rust/debris preventing water drainage. This will be rectified when new storage cylinders are installed next visit. | | | |
| 10 | H2GEN | 17-Apr | | installation of new H2 cy | n order to purchase tubing and clamps for rlinders at next site visit. nts taken tubing clamps and fittings will be | | |
| 11 | BBSS | · | | ordered in Darwin. Modify RBL tray to ensu | re air flow past the sonde sensor boom, lugging, paint white with Solagard paint | | |
| | | 5-Apr | | | installation of the pipe insulation. | | |
| | | 9-Apr | | | ion of modified air pipe in progress. | | |
| | | 10-Apr 11-Apr | | | t. Awaiting Russel Kun approval. | | |
| | | 13-Apr | | RBL air pipe painted by the observers (1st coat) Completed. Temperature at the inlet and outlet of Ambient air assembly is within 1 deg C | | | |
| 12 | BBSS | | | | Affix WD54909 sticker to DigiCORA III box | | |
| | | 6-Apr | | Completed. | | | |
| 13 | MPL | | | Install new RAM on MPL | _ | | |
| 11 | MDI | 6-Apr | | Completed. RAM installed. Hyperthreading turned off in BIOS. | | | |
| 14 | MPL | | | Install serial cable Installed by Franklin with guidance from Darwin (CS-2008-0152) 11-Mar-2008 | | | |
| 15 | IRT (SKY) | | | Replace lens | | | |
| | | 7-Apr | | Completed. | | | |
| 16 | IRT (GND) | | | Replace lens | | | |
| 47 | CDC Cuerri | 7-Apr | | Completed. | | | |
| 17 | GPS Suomi | 6-Apr | | Replace MET pack Metpack casing not on s site.These do not need t | ite. Metpack electronics located on to be replaced. | | |
| | | 16-Apr | | Metpack casing installed | d. Body is in good condition but the screws zed. Will need to be shipped to Darwin | | |
| 18 | GPS Suomi | | | Replace unit inside van | | | |
| | | 5-Apr | | Unit installed and mentor advised. Appears operating ok. Awaiting confirmation from mentor. | | | |
| 40 | COMM | 7-Apr | | Mentor confirmed data is | | | |
| 19 | СОММ | 7.4 | | and verify operation by o | bolts - if on site. Check antenna alignment, contacting IGENOC | | |
| _ | | 7-Apr | | Commenced. | atad taday. Inadamieta missi an af mit | | |
| | | 8-Apr | | | eted today. Inadequate number of nuts lied. Able to complete job with some s. | | |

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| | | 9-Apr | | Mike Ryczek checked with INTESLSAT to see if peaking of antenna and polarization adjustement required. INTELSAT advised that all is good and no adjustements necessary. | |
| 20 | VANS | C A 77 | | Verify that the materials for D-Van floor repair are on site. | |
| | VANS | 6-Apr | | Materials not on site. Not shipped from Australia yet. Investigate I-Van UPS fault (UPS failed on 8th of April requiring | |
| | V7440 | | | change to spare UPS) | |
| | | 10-Apr | | UPS started ok after being left off overnight. Will continue monitoring. | |
| | | 11-Apr | | Tested UPS today under load and it has failed again. Will require replacement Liebert UPS. | |
| 21 | COMMS | | | Check and test all spare RS232 - fibre converters, organize into pairs and label so that observers can install them when required. | |
| | | 16-Apr | | Postpone. Low priority task - subject to time available. | |
| | COMMS | | | Install new SIMM card in Iridium Sat Phone | |
| | | 16-Apr | | Tested Iridium phone with old SIMM card. Working fine and there | |
| | | 17-Apr | | is about 120 minutes available on the card. New SIMM card installed as per request from Clif Meyers. Phone | |
| | | 17-дрі | | tested and works fine. | |
| 22 | COMMS | | | E-Van network cables to be checked and re-run when required - | |
| | | | | hardware and cable has already been shipped to Nauru | |
| | | 11-Apr | | Checked routers and sent email to Dick Eagan in response to his | |
| | | 16-Apr | | Query. | |
| | | 17-Apr | | Running E-van cables in ducting Cables installed. New patch panel will be shipped from Darwin to | |
| | | 1770 | | be installed in E-Van. | |
| | DS | | | Disbale DS rack UPS self test to prevent power blackouts to DATA SYSTEM. | |
| | | 4-Apr | | Noticed that DS restarted for no reason. Mike R notified Dick | |
| | | | | Eagan and worked with him to reestablish communication with rack APC UPS. | |
| | | 5-Apr | | Dick Eagan was able to log into the APC UPS and disable the self test routine which due to faulty batteries was causing unnecessary power cycling of DS. This problem was also identified and rectified in Darwin. Dick Eagan is currently sourcing new UPS' for DS. | |
| | COMM | Q Apr | | Take photos of DS rack and email to Dick Eagan | |
| 23 | MET | 9-Apr | | Completed. Replace METCONSOLE laptop with a dedicated computer | |
| 20 | ··· | 13-Apr | | Postpone. Ship Metconsole computer from Darwin. Obtain USB to serial converters to provide additional serial ports required. | |
| 24 | MET | | | Replace AWS anemometer - badly corroded | |
| | | 13-Apr | | Replacement wind head not on site. Will check at the couriers | |
| | | 16-Apr | | office next week. Postpone til next visit when replacement windhead shipped from | |
| | | 10-Αρί | | Darwin is on site. | |
| 25 | COMMS | | | Install shelf for new SAT modem - Dick Eagan is organizing shelves for both Manus and Nauru | |
| | | 7-Apr | | Completed. | |
| | | . T. | 1 | L L L | |

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| 26 | MFRSR | | | • | laced - badly corroded. Check MFRSR | |
| | | 10.1 | | alignment after stand ch | | |
| | | 10-Apr | | | . Instrument levelling and alignment Will check again tomorrow at Solar Noon. | |
| | | 12-Apr | | Alignment verified at sol | | |
| 27 | POWER | | | electrician | in to the existing power outlets by an | |
| | | 15-Apr | | trip. | n available on the island to carry it out this | |
| 28 | VANS | | | Check power wiring to e the outlets. | ensure there is no excessive load on any of | |
| | | 15-Apr | | Ongoing | | |
| | | 16-Apr | | Ongoing | | |
| | | 17-Apr | | Completed | | |
| 29 | OTHER | | | Install Radmin on obser | | |
| | | 14-Apr | | | C based observer PC being set up. | |
| | | 16-Apr | | New observers PC with | | |
| | VANS | | | found | rust converter and paint any rust spots | |
| | | 6-Apr | | Observers cleaning rust from Y-van. | | |
| | | 7-Aug | | Rust and treatment rem | | |
| | | 11-Apr | | Y-Van treated for rust and painted with primer by the observers. | | |
| | | 12-Apr | | VSAT antenna stand painted. | | |
| | | 13-Apr | | , and the second | entry holes sealed and covers installed. | |
| | | 14-Apr | | Asked maintenance per Z-van painting in progre | son to remove rust and paint fence posts. | |
| 30 | VANS | | | Replace Y-Van AC unit | | |
| | | 4-Apr | | | red. Refrigerant relcaimed. | |
| | | 5-Apr | | rectified. Isoaltion switch | n unit in progress. Faulty electrical wiring n purchased and installed. | |
| | | 6-Apr | | | unit installed, tested an operational. | |
| | OTHER | | | Set up Observers PC us software necessary. | sing CorePC distribution. Install all the | |
| | | 14-Apr | | In progress. | | |
| | | 15-Apr | | | updates and installing software. | |
| | | 16-Apr | | New observers PC installed. Email accounts have been set up. All necessary software and drivers installed. | | |
| | OTHER | | | Check flange size to verify correct fuel gauge type | | |
| | OTHER | | | Remove spare observers PC as per request from Larry/Dick Eagan | | |
| | | 14-Apr | | PC removed. This was an old GX270 machine. Parts used to repair IRT PC which has failed. | | |
| 31 | GENSET | | | Replace water pump | PENDING | |
| | | 14-Apr | | Andrew following up. | carry it out today but has not shown up. | |
| | | 15-Apr | | Waiting for mechanic. | | |
| | | 16-Apr | | Still no sight of the mech | hanic. | |

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| | | 17-Apr | | | it to the site during Site Visit. He will carry are favourable (no power changeovers at | |
| 32 | OTHER | | | , | nance as per Maintenance Checklist | |
| | | 11-Apr | | | ance carried out while system down for | |
| | | · | | TWTA replacement | · | |
| | | 12-Apr | | AERI routine maintenan | ce completed | |
| | | 17-Apr | | Completed | | |
| 33 | OTHER | | | Check ARM Kiosk | | |
| | | 17-Apr | | Brisbane. | hile waiting for the plane back to | |
| | SHIPPING | | | List items to be shipped | following visit | |
| | | | | Replaced TWTA to SGF | | |
| | | | | Replaced CUDC to SGF | | |
| | | 13-Apr | | old corroded TSI mirror. | | |
| | FUTURE NEEDS | | | List items needed for ful | ture visits (spares, etc.) | |
| | | | | replacement batteries for | | |
| | | | | eyewash solution - in sn | | |
| | | | | rust converter and suitable paint | | |
| | | | | selection of small stainle | ess steel bolts nuts and washers (metric) | |
| | | | | Metconsole PC - to be built in Darwin and shipped to site | | |
| | | | | tools (socket set, 2 small adjustable spanners, set of insulated | | |
| | | | | screwdrivers, set of small vise-grips) and a lockable toolbox to | | |
| | | | | keep them under lock on site. | | |
| | | | | replacement Liebert UPS | | |
| | | | | AERI filters and AERI at | | |
| | | | | KOH flakes for electroly | | |
| | | | | Electrolyser SG plug ori | ngs | |
| | | | | compresor gaskets | | |
| | | | | rubber gloves, work glov | | |
| | | | | coalescing filter assemb | | |
| \vdash | | | | spare cartridges for coa | | |
| | | | | replace MINICK UPS bat | ttery/replace MMCR UPS with a larger unit. | |
| | TASKS FOR NEXT VISIT | | | | | |
| | | | | Install new coalescing fi | | |
| | | | | | owering the pump and security light on the | |
| | | | | | emove it from Hazardous Area (currently | |
| | | | | used outlet not suitable for use in HA) | | |
| | | | | Install H2 plubing and n | | |
| | | | | | s on the electrolyser cells. | |
| | | | | Install electrolyser compressor after replacement pulleys are sourced | | |
| | | | | Install patch panel in E- | Van | |